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**CURE OF CLUB-FOOT,
BENT KNEE, WRY-NECK, SPINAL,
AND OTHER DEFORMITIES.**

WITH
REMARKS ON THE LATE PROGRESS OF ART
AND ON THE
Necessity of a Public Institution.

BY GUSTAV KRAUSS, M.D.

MEMBER OF SEVERAL LEARNED SOCIETIES.

WITH CASES AND WOOD-CUTS.



LONDON:
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1839.

831.

Prüfe mit Sorgfalt, wende an die entsprechenden Mittel und Kräfte, folge mit wachsamem Auge den Veränderungen der Natur:—und zu deiner Verwunderung werden des menschlichen Körpers gestörte Formen sich umwandeln zu Ebenmaass und Wohlgestalt.

(Examine with care, use appropriate means and powers, follow the changes of nature with watchful eye:—and to your astonishment the distorted forms of the human body will change into symmetry and beauty.)

P R E F A C E.

IN offering these pages to the public, I obey the dictates of my heart, and discharge a duty which I feel due to those of my poorer patients, whose misfortune it is to labour under deformities.

A tour for purposes purely scientific, brought me to England in the year 1837.

The division of the tendons as a remedy for deformities, at that time scarcely practised in this country, induced me, rather for the sake of professional investigation than with any other view, to undertake the treatment of some cases. The result of these (contrary to my original design) led me on to farther exertion. With zeal and delight I continued my labours. Obeying the calls of the afflicted, I penetrated the remotest districts of London, unremittingly seeking to bring to perfection the powers of art in the cure of deformities.

The improvements I have made in the mode of treatment, and the various new mechanical instruments I have invented, might be brought to testify my success; but the best proofs of it are the cures I have effected, particularly those of congenital club-foot, of the highest degree, and in patients of an advanced age.

It is far from my intention to exalt my own merits, or cast blame on others for not having been equally successful. The cause of my success is attributable to my having dedicated myself more to this subject, and taken peculiar pleasure in its study. Shrinking from no sacrifice where the welfare of my patients and the development of science were concerned, I proceeded steadily in my career.

But while my activity has ever been on the increase, I find serious impediments to contend against: in the dispersed position of the patients on the one hand, and the unfavourable worldly circumstances of many of them on the other.

My sincere desire is, therefore, that the profession, in common with all friends of humanity, should acknowledge the necessity, and heartily assist in the establishment of a public institution, for the relief of the poorer classes labouring under deformities.

With this view, and in order to illustrate by facts the great improvements which have been made in Orthopædia, I submit these pages to the public. It results from their design, that I should avoid a purely scientific treatment of the subject; and I have endeavoured as much as possible to make it intelligible to the general reader.

I have evinced elsewhere to my professional brethren how I have estimated and promoted the subject, considered scientifically. I refer here to

the communications I have made to the medical societies of the metropolis ; and I shall do it further in a *treatise* which I have submitted to the judgment of the Academie des Sciences in Paris, and which will shortly be published.

Considering the multitude of cures which I have effected, I might easily have increased the number of cases cited in these pages, but I feel that sufficient has been laid before the reader.

Could I paint in lively colours how my heart has been pained, when, however desirous, I have been unable to render assistance to the afflicted : when compelled to witness unfeeling parents neglect the proper remedies to rescue their offspring from deformity ; to see adults incapable of bestowing their time and attention on the requisite treatment, because obliged to toil for their daily bread : could I by words express what I have so often felt, and make others sympathize in my feelings, the success of this appeal would be certain.

A short time since I met a poor man, painfully dragging his body along upon crutches ; for both knees were bent at right angles, one only being assisted by a wooden leg. Pity and scientific interest induced me to address him. He told me that his limbs had been in that condition from his earliest infancy, and that he obtained his livelihood as a tailor. I spoke to him of the hope of his deformity being removed. His reply was, that he had indeed heard of wonderful cures of this

description, but was afraid the treatment would be incompatible with his circumstances; that an acquaintance of his had undergone the operation of dividing the tendons, but being unable to relax his daily employment, a cure could not be accomplished. This acquaintance was Coleman, whose case I have described, page 32.

I address these pages to all who love to assist the unfortunate. I have begun, and continue to collect subscriptions for the establishment of a public institution for the gratuitous reception and treatment of the poor. When the requisite number of subscribers shall have given in their names, a meeting will be called, to choose a committee, and determine upon the necessary regulations.

May this beginning receive the co-operation of philanthropists, and may none refuse it assistance according to their ability.

Let the work be but begun, and its usefulness will not be tardy in developing itself.

G. KRAUSS, M.D.

15, MADDOX STREET.

ORTHOPÆDIA.

IF we cast our eyes on the history and development of Orthopædia, (i.e. the science of curing the deformities of the human body,) we cannot fail to be surprised that a branch of the healing art, perhaps more accessible than any other to the influence of science, has, till of late, been the subject of such slight investigations, that its study has been strange to the physician, and that it has for the most part been left to the rough hand of the mechanic to restore the disfigured parts of man's frame to their just proportions.

Is not the human form the most beautiful and noble in the broad field of creation? Is not the disturbance of its symmetry equally unpleasant to the eye as burdensome to the sufferer? and does it not react injuriously on the whole system in many ways? From the remotest antiquity the sculptor's hand has been ambitious to imitate, by the hammer and chisel, the noble forms of the human body; and this attempt has always been justly considered one of the fairest exertions of art. Yet the medical practitioner remained without the knowledge requisite to restore a deformed frame to its natural proportions; and, as if the human body were an inanimate mass, requiring none but mechanical powers and measurements, he resigned this office to the mechanic, ignorant alike of the internal structure of its parts and the laws which govern life.

Surely, to restore the disfigured form of a man is not less honourable than the healing of other internal and external diseases; and which is the nobler task for the surgeon, entirely to separate with the knife a deformed and unserviceable limb from

the body, or to restore it to symmetry and use? The latter has, unfortunately, till now, been too much neglected, and the former but too frequently practised, supposing it preferable to disburden the body of a member whose functions it was held impossible to recover.

There are indeed to be found even in the writings of Hippocrates, many correct views concerning the nature and cure of deformities; yet but inconsiderable progress was made from his time till towards the end of the last century, when Venel, a physician in Switzerland, turned his attention particularly to this subject. By the invention and application of mechanical instruments, which, though imperfect, deserve our full acknowledgment, he succeeded, to the astonishment of his contemporaries, in curing deformities of the spinal column, as well as of the limbs. Venel's principles were afterwards successfully brought into use by Jaccard and D'Yvernois of Paris.

Dr. Heine considerably improved upon the methods of Venel, and in the year 1812 formed an orthopædic institution in Wurtzburg, (the first in Germany,) to which sufferers betook themselves from all parts.

Still, however, the cure of deformities continued too much under the influence of mere mechanical application. This was admitted by the London College of Surgeons, which, in 1822, offered a prize for the best essay upon the advantages of mechanical means in the treatment of spinal curvatures. Messrs. Shaw and Bampffield were the successful writers; and an important step was thus made in orthopædia.

But, though the attention of the profession became more and more alive to the importance of this branch of medical science, and many orthopædic institutions were founded, under the direction of able practitioners, both in Germany and France, much remained to be accomplished. The Academy of Science in Paris, aware of the benefit which the further investigation of this subject would render to mankind, liberally offered 10,000 f. for the best essay upon it. The prize was awarded to Drs. Jules Guérin, and Bouvier, the comprehensive results of whose labours I embodied in a small work of my own.

Thus, art and science combined, began to raise orthopædia to a higher degree of estimation, and to rescue it more and more from the hands of the mere empiric.

Fresh progress has been made in our times. To many sufferers, even those of an advanced age, and who had hitherto preferred rather to retain their deformed members than endanger existence by a violent operation, assistance is now tendered.

This is a great and noble thought: however extraordinary and almost incredible it may at first view appear, it is nevertheless true, and founded upon the very laws of our existence.

This progress must be referred to the practice of dividing the tendons. To meddle with the tendons had been previously considered by surgeons as highly dangerous; and it was supposed, that if divided, they would never effectually reunite. But experience has clearly taught the contrary, and proved that the division of the tendons is neither hazardous nor painful, nor followed by any inflammation or dangerous nervous disturbance, but that they again unite in a short time, so as to perform their natural functions without impediment.

Deformities of the limbs and neck are generally accompanied by a contraction of certain muscles; and the cure of many of them had hitherto appeared difficult or impracticable, as the contraction could not be removed by mechanical means. It is true, that besides the muscles, the ligaments and other parts are frequently in a contracted state, and set themselves in opposition to the straightening of the deformed parts; but it is evident that the opposition of the ligaments alone is more easily overcome by mechanical extension, than when such means have at the same time to contend against contracted muscles also.

The tendons (in popular language, sinews or leaders) are the continuation of the muscles, and join the bony parts, which are set in motion by the muscles. To lengthen the tendons is, therefore, practically the same thing as lengthening the muscles. This is effected by dividing the tendons, whose elongation is produced by the intervening substance that forms between their divided ends.

The division is so performed, that a narrow knife is inserted on the side of the tendon, which is cut through without wounding its protecting skin. Thus, the division of the tendon is in the hand of an experienced surgeon a very simple operation; lasts scarcely a quarter of a minute, and gives but little pain. The incision of the skin is generally less than a quarter of an inch in length, and only a few drops of blood usually flow from the wound, which heals by the second or third day afterwards.

When the tendon is divided, the superior end separates itself from the inferior by the contraction of the muscle which belongs to the tendon. The intermediate space between those ends fills up by the process of regeneration, so that in from eight to fourteen days it is evident to the touch that the two ends of the tendon are united. In a short time the intermediate substance becomes thicker and harder, so that frequently in a few months after the operation, it can no longer be distinguished from the tendon itself.

Dr. Stromeyer of Hanover has the merit of recalling this operation to its simple principles. It had already been performed in 1784 by the German Drs. Thilenius and Laurenz, in 1806 by Sartorius of Nassau, in 1809 by Michaelis of Marburg, and in 1816 by Delpech of Montpellier.

The unpleasant deformity called club-foot first led to dividing the tendons, and now hundreds owe the rescue of their limbs from distortion to this simple expedient. But the division of the tendons is not alone sufficient to restore crooked members to their natural form. As I have before observed, it only prepares the affected parts to yield to the influence of the mechanical means that must subsequently be applied, and renders their effect possible.

A cure is more or less difficult, in proportion to the resistance which the ligaments offer to the straightening of the parts, and to the change of form of the bones, and also in proportion to the patient's sensibility to the use of mechanical power.

Thus, the difficulty of effecting a cure is often great, particularly with persons of advanced age, and where the deformity has existed from birth. Hence it may be understood, that surgeons

who were induced to try this operation from the fame of its results, have frequently been disappointed in their expectations, because they wanted the requisite experience, proper mechanical assistance, and sufficient knowledge of the mode of its application.

As scarcely any one distortion is exactly like another, the surgeon should himself possess mechanical talent for invention, in order, in particular cases, to bring into play the required mechanical power.

While in simple cases, where the mal-formation is maintained chiefly by the contraction of the muscles, the mechanical means will perfect a cure in a few weeks; others demand many months: and only by degrees does the power of the machine conquer the obstinate resistance of the deformity. In such cases, it sometimes happens that several tendons must be divided, or that the division of the same tendons must be repeated.

It is clear, that in spite of the division of the tendons, all deformities of the human body are not within the power of art; the curability of a mal-formation, and the probable result of the treatment, depend upon its causes, and its anatomical state.

The principal causes of deformities are the following:—

1st. The deformity is congenital; and then depends upon influences not yet quite determined.

2nd. It may arise from the effect of some disease, which, either by keeping the parts in a bent posture, or by a sympathetic retraction, causes the mal-formation.

3rd. From want of firmness and hardness in the bones, or from weakness of the muscles and ligaments, which may be either local or general. The weight of the body itself, a faulty bearing, or predominant exercise of the muscles on one side, frequently gives rise to the deformity, or favours its progress.

This is the origin of ricketty mal-formations, and of many deformities of the back, so frequent during growth in the female sex.

4th. Distortions are frequently caused by disorders of the nervous system, which are either local, or proceed from the brain

and spinal cord. The deformity is here produced either by paralysis, or a morbidly increased contraction of the muscles.

Congenital deformities, although very difficult of cure at an advanced age, have usually the advantage of being unaccompanied by complete muscular paralysis. The cure of the cases arising from causes of the second kind is generally easy, when not preceded by diseases in the joints themselves—at least, if the disease has not left behind a considerable change in the structure of the joint. Those arising from the causes mentioned in the third place, are curable if timely assistance be obtained. The deformities arising from a disordered state of the nerves may be cured, provided such disordered state no longer exists, and the deformity is only its result. But if the derangement of the nervous system continues, a cure is only possible under certain circumstances.

It is clear that the division of the tendons is a remedy not applicable to all curable deformities. The surgeon, even in cases where experience has shown the great assistance to be derived from this operation, must not suppose it universally applicable; and the important question arises, when mechanical means are alone sufficient, and when they require the aid of the division of the tendons.

The surgeon has to consider first, whether a cure is possible without an operation, and then to calculate the advantage to the patient which each method of cure presents. Now, in cases where the deformity exists in early youth, or has been of short duration, or of a slighter degree, a cure may frequently be effected without an operation.

But my design being only to make the subject of these pages intelligible to my non-professional readers, I purpose, without entering into the depths of those important inquiries, in the following remarks, to cast a cursory view upon the principal kinds of curable deformities.

OF CLUB-FOOT.

THIS distressing deviation from the symmetry of the human frame is of very frequent occurrence, and deserves our most serious attention. Club-foot occurs either before or after birth, and comprehends various classes. I think I can most clearly designate the principal ones as follows:—

1st. The *Tip-foot* (HORSE-FOOT, *Spitzfuss*, *pes equinus*.) When the sufferer walks on his toes, and the heel is drawn upward. In this class may be included the *knot-foot*, (*pied-bot en dessous*,) where the patient walks upon the back of the foot.

2nd. The *Cross-foot* (CLUB-FOOT INWARD, *Leneerfuss*, *varus*.) When the sufferer walks on the outward edge of the foot, or the outward part of the dorsum, the point of the foot being turned inwards.

3rd. The *Outbow-foot* (CLUB-FOOT OUTWARD, *Schrägfuss*, *valgus*.) The sufferer treads upon the inward part of the foot; the point of the foot, and sometimes the heel, are turned outward.

4th. The *Heel-club-foot* (*Fersen-Klumpfuss*, *talipes calcaneus*.) The patient walks upon the heel.

These various kinds of club-foot present great difference in degree. Congenital club-foot generally takes the *inward* form, and mostly affects both limbs. The cases which arise after birth more generally belong to the genus called tip-foot, or to the transition state from tip-foot to cross-foot. Outbow-foot is a deformity of rarer occurrence. Congenital cross-foot is distinguished from that arising after birth essentially by this: that the displacement and change of the foot bones exist in a far higher degree in the former, and, that the ligaments corresponding to the contracted muscles are more considerably shortened. This condition enhances the difficulty of curing congenital club-foot; while that produced after birth can be cured more easily, and in a much shorter time, by dividing the tendons; for here the contraction of certain muscles chiefly keeps up the

deformity, which is consequently remedied by the division of their tendons.

For the rest, the curability depends on the causes of the deformity, as I have above generally pointed out.

In tip-foot it is chiefly the muscles of the calf which keep up the mal-formation; and, after the great leading tendon of the muscles of the calf is divided, it yields to mechanical extension, and, as here no particular displacement exists among the individual bones of the foot, the cure is generally effected in a few weeks.

This is partly true also in cases of cross-foot and outbow-foot which happen after birth; although in the higher degrees of this deformity, as well as in cases of congenital club-foot, the division of several tendons is sometimes required. However, in the congenital club-foot of children the division of the tendo Achillis is alone, for the most part, sufficient to effect a cure.

In congenital club-foot, if advice be *early* sought, a cure may generally be attempted by mechanical means alone; nevertheless, even with children of from one to two years of age, the contraction of the muscles of the calf is frequently so considerable, that the mechanism meets with great resistance, and demands the continued attention of the surgeon; and hence a cure by such means with the poorer classes is mostly impossible. Under these circumstances, it is for the patient's interest to have the tendons divided, as being the speedier and less painful remedy.

For the cure of club-foot generally, and particularly in congenital cases, the mechanical after-treatment is of great importance. Congenital cases, if difficult, or existing at an advanced age, may require months, or even more than a year. An effective club-foot machine is here the chief means of cure.

Well acquainted with the mechanical means adopted by the German and French orthopædists, and fully aware of their importance, from the time I first entered upon the treatment of club-foot, I was earnest and assiduous in my endeavours to bring such means to greater perfection. After proving my progressive ideas upon the patients themselves, making continual alterations and improvements, the invention of my club-foot machine

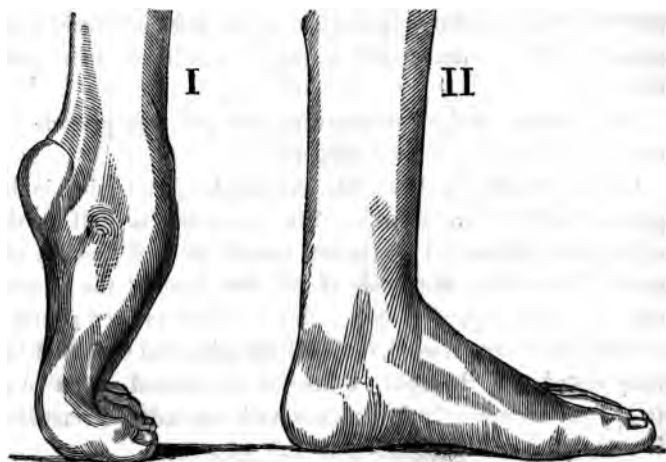
was the result of my labours. This machine I did not hesitate to lay before the *London Medical Society*, at their meeting of the 1st of April, 1839; and also before the *Royal Medical and Chirurgical Society*, at their meeting of the 23rd of April, 1839; as the best yet discovered. The cure of the severest cases of club-foot in patients of an advanced age, is the best evidence of its efficacy.

CASES OF CURE.

I.—TIP-FOOT CURED BY DIVIDING THE TENDO ACHILLIS.

GEORGE BOCOCK, 29, Union-street, Hoxton New Town, eighteen years of age. In his third year he had an abscess in the calf of the left leg, from an external injury. The result was a contraction of the heel, that still remained when he placed himself under my care.

The patient walked upon his toes, the heel being drawn up six or seven inches from the ground. The foot presented a true specimen of tip-foot, (*pes equinus*,) as may be seen by the sketch No. I.



On the 4th of December, 1837, I divided the tendo Achillis, and the operation was neither followed by fever or local inflammation. Dec. 13th, the foot formed a right angle with the leg, (see Fig. II.) On the 16th the patient began to walk, assisted by another person. Jan. 24th, 1838, he walked with a stick, but still limped. March 18th, he walked a distance of three miles without the aid of a stick; and towards the end of April he could manage fifteen or sixteen miles a day, without pain. In March, 1839, scarcely any limping was discernible in his gait: and the division of the tendon can no longer be discovered by the touch.

I laid a memorial of this case before the *Royal Medico Chirurgical Society*, at the meeting held the 24th of April, 1838, which appeared in the *Lancet*, (May 26, 1838;) in No. xlix. (August, 1838) of the *American Journal of Medical Science*; in the *Calcutta Medical Journal*; and also in the *Berlin Medicinische Vereinszeitung*.

II.—TIP-FOOT CURED BY DIVIDING THE TENDO ACHILLIS.

MARY GEDDES, of 23, Eldon-street, Finsbury Circus, aged nine years. When in her second year she began to walk—her parents remarked that only the toes of her left foot touched the ground. Many unsuccessful attempts were made to remedy this evil.

When placed under my treatment, her left foot presented a case of *pes equinus* of a *mild* degree.

On the 14th March, 1838, I divided the Achilles-tendon, in the presence of Dr. Dieffenbach. The operation, as well as the subsequent mechanical treatment, turned out well; and by the end of March the entire sole of the foot touched the ground, and the child began to walk. But the heel evinced a strong inclination to turn inward, particularly when the weight of the body rested upon the limb. I directed mechanical means so as to oppose this prejudicial tendency, and succeeded in removing it entirely.

Towards the end of April the patient could walk from one to two miles without difficulty. She does not limp, and the limb which was operated on is now of equal length with the other.

III. TIP-FOOT (PES EQUINUS)—DIVISION OF THE TENDO ACHILLIS—CURE.

MARIA, daughter of Mr. STACKABLE, Porter of Parliament, residing at 14, Little Tuthill-street, Westminster, twelve years of age. In her third year her parents remarked that she began to walk upon the toes of her left foot, a tendency which increased with her years. When Maria Stackable was confided to my treatment the left foot was drawn upward by the muscles of the calf, and presented a *tip-foot* of a *mild* degree.

On the 20th May, 1838, I divided the tendo Achillis, in the presence of Dr. Bureand Rioffrey, and several other surgeons. Fourteen days after the operation the foot returned to its natural position, and the patient began to walk. But the heel, decidedly inclining outward, demanded the greatest attention; and I succeeded in removing this tendency by mechanical means.

The child now walks very well, without limping, as much as five or six miles. I had the honour to present this patient at the meeting, on the 1st of April, of the *London Medical Society*.

The two last instances show how the most simple cases may become difficult, and their successful cure require the strict attention of an experienced surgeon.

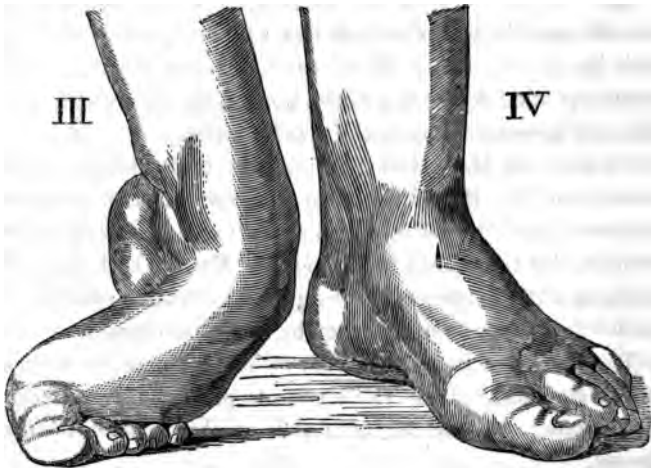
IV. TIP-FOOT (PES EQUINUS) OF A VERY HIGH DEGREE—DIVISION OF THE TENDO ACHILLIS—CURE.

CATHERINE, fosterchild of Mr. FRENCH, 29, Great Quebec-street, New Road. From her childhood she had been afflicted with *pes equinus* of the left foot, the deformity being distinguished particularly by this, that the toes were turned quite

upwards, their back touching the back of the foot. See Fig. No. III.

On the 18th March, 1838, I divided the tendo Achillis, in the presence of Dr. Lynch. The subsequent treatment presented some difficulty; yet, in a month the foot formed a right angle with the leg (Fig. IV.) and the patient began to walk.

Although, on account of a nervous lameness in the lower limbs, her gait is not completely free, yet the patient made gradual progress, and now walks very well.



V. TIP-FOOT MAKING THE TRANSITION TO CROSS-FOOT (PES EQUINUS VARUS)—DIVISION OF THE TENDO ACHILLIS—CURE.

H. WOODTHOPE, an inmate of *St. Sepulchre's workhouse*, after a scarlet fever at five years of age, had a paralytic stroke of the right side. From that time up to his 38th year, Woodthope walked upon the toes of his right foot: at every step the muscles of the calf were seized with cramp, and the heel drawn entirely upward, while the toes turned rather inward.

On the 9th of March, 1838, I divided the tendo Achillis. Woodthope, after beginning to walk upon the sole of the foot, was seized with the small-pox, though in a mild form; and towards the end of July he again attempted walking, and, improving progressively, was, by the middle of August, able to walk four miles without experiencing the least pain, while previous to the operation he could scarcely walk half a mile, without considerable suffering. In the middle of March, 1839, Woodthope could manage five or six miles a day.

This cure proves that even in spasmodic contractions, the division of the tendons is of vast utility. It excited the greatest astonishment among the officers and inmates of the workhouse—one of the former of whom expressed his fears to me on the day of the operation, “that I was only making experiments on the poor fellow.”

VI. DOUBLE TIP-FOOT (PES EQUINUS)—DIVISION OF BOTH TENDONS OF ACHILLES—CURE.

THOMAS COSTIN, of Wallington, Carshalton, Surrey, school-master, of very weakly constitution, was seized in his fifth year with a rheumatic fever, and an affection of the head. A contraction of both feet was the consequence, i.e. Costin was compelled to walk upon his toes, his heels being drawn upward.

It is evident that under such circumstances his gait must be greatly impeded; and indeed Costin could not go the least distance without considerable difficulty. It was impossible to see so melancholy a deformity without sympathy.

The charitable inhabitants of Wallington patronized Costin, and confided to him the instruction of their children.

Although he could scarcely believe any relief possible, he had sufficient confidence and courage to submit himself to the necessary treatment. On the 18th July, 1838, I divided the Achilles tendons of both feet. The subsequent treatment, on account of his advanced age, the high degree of the deformity, and his

weakly constitution, was more than usually painful; yet, by the end of August both feet stood at right angles to the legs, and the entire soles rested on the ground. In the middle of September he could walk about in his room, and returned to Wallington to benefit by the country air. But scarcely had he arrived when he was seized with a violent cold, which confined him fourteen days to his bed. Nevertheless, by the end of October he could walk and stand for the space of half an hour, and on the 20th of November accomplished near two miles without pain.

The inhabitants of Wallington beheld with astonishment the teacher of their children, whom they had so long been accustomed to see painfully moving upon his toes, now walking through the village upon well formed feet.

This case is particularly interesting, because it presented the uncommon appearance of the mal-formation in both feet, and proves that this simple remedy may be successfully resorted to even where the patient suffers from great constitutional weakness.

VII. DOUBLE CONGENITAL CROSS-FOOT (CLUB-FOOT INWARD) DIVISION OF BOTH TENDONS OF ACHILLES—CURE.

MARY, daughter of Mr. HARMES, a policeman, No. 28 of the G division, residing at 17, George-street, King's Cross—a healthy and strong child of two years old, was born with club-feet. Shortly after her birth her mother took her to a London Hospital; but the mechanical treatment had as little effect in remedying the mal-formation as a large seton which was placed on the surface of the leg.

On the 14th of December, 1838, when I divided the Achilles-tendons, there was congenital club-foot of the highest degree on both sides. The mother paid every attention to the remedies I applied, and, after overcoming the numerous difficulties incidental to the treatment of club-foot at so tender an age, by the beginning of April a cure was accomplished, and the child began to walk on the soles of the feet.

VIII. DOUBLE CONGENITAL CROSS-FOOT (CLUB-FOOT INWARD.)

J. WATKINS, son of **Mr. WATKINS**, 14, Crown-street, Soho, was born with club-feet. The deformity was left to itself up to the second year of his age, when his parents placed him under my care. Both feet presented congenital club-foot inward of the highest degree.

On the 18th of July, 1838, I divided the Achilles-tendons; but the progress of the cure was slow, on account of the subsequent mechanical treatment (upon which in such cases every thing depends) not being followed up with care. By the end of August, however, the feet were so far better, that they could be raised almost to a right angle with the leg. In October the child was allowed to be ten days without the machines, which caused a relapse.

In the middle of March, 1839, the feet were so far recovered that the child began to walk on the soles of the feet. Nevertheless much remains to be done, and I doubt if a perfect cure will ever be effected, unless the mechanical treatment be more carefully followed up.

IX. DOUBLE CONGENITAL CROSS-FOOT (CLUB-FOOT INWARD)— CURE.

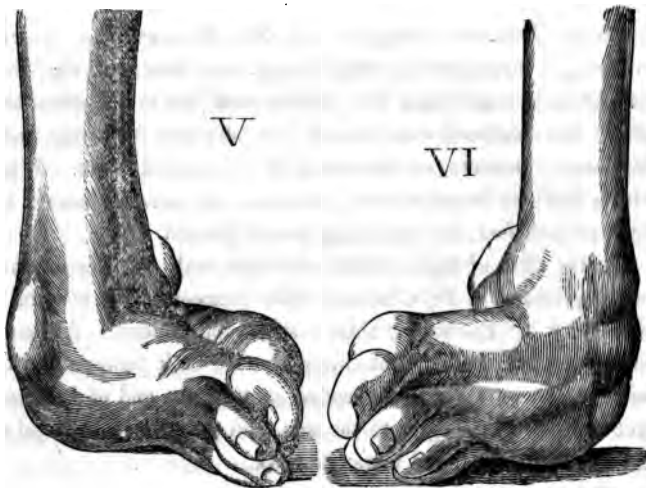
MARIA BURGESS, daughter of **Mr. BURGESS**, 15, Clark's Buildings, Broad-street, Bloomsbury, was born with club-feet. Immediately after birth her mother sent her to a London hospital: the continued exertions of the surgeons for a year and a half, were, however, unattended with the desired effect. When Maria Burgess began to walk, it was on the outward part of the back of both feet, the toes being turned inward.

On the 29th of April, 1838, I divided both Achilles-tendons, in the presence of Dr. Chaumet, chief surgeon of the hospital of St. André, at Bordeaux, then resident in London. Although the machines were brought into play with little power upon the patient, the cure was progressive, and, by the end of July both feet were at right angles to the legs, and the girl could stand on the flat of her feet, and began to walk.

In the beginning of October the child walked very well, and, for a distance of two miles, with ease. At a visit I paid her about the end of December, I found she was daily gaining firmness of foot, though I had hoped to have seen a greater improvement in the *form*, which, however, by a diligent use of the machine may be easily effected.

X. DOUBLE CONGENITAL CROSS-FOOT (CLUB-FOOT INWARD) OF THE HIGHEST DEGREE—CURE.

J. D. EARLES, son of a deceased officer in the British army, residing at No. 1, Lyon-street, High Holborn—twenty-three years of age, of slight stature—was born with club-feet. Immediately after his birth the assistance of the most eminent surgeons in his native city (Cork) was resorted to, and subsequently other surgeons were consulted in London. As at that time the division of the tendons was known as a means of curing club-foot, his case must have been considered incurable, on account of his advanced age, and the high degree of the deformity. And certainly at the time Earles confided himself to my treatment, his feet presented the highest degree of congenital cross-foot. See figures No. V. and VI.



On the 20th of December, 1837, I divided both Achilles-tendons, and the deformity slowly gave way. The toes, however, still inclined inward; and on the 2nd of March I divided the plantar fascia (*a fibrous sheath of the sole of the foot*) and the tendon of the abductor muscle of the great toe in the right foot. This second operation had the desired effect; and on the 27th of April I performed the same on the left foot. From this time a progressive improvement was visible, and in August the deformed feet had almost attained their natural form, as may be seen by the figures No. VII. and VIII. which were drawn from the models taken at that time.



In September Earles began to use his feet, and got on so well, that in the beginning of October he could walk a mile, in December two miles; and he can now manage six miles a day.

The cure of Earles's bodily deformity had no small influence on the state of his mind. While before, he was so depressed in spirits as could not fail to excite apprehension on his behalf, he now seems awake to new life, and rejoices in his being.

I lay particular stress on this case, because it concerns a cure of congenital club-foot of the highest degree; such as I have no hesitation in asserting has not yet been performed by any other surgeon in this country, and may be taken as an evidence of the progress which, by unwearied exertions, I have made in the treatment and cure of such deformities.

I presented this patient before the *London Medical Society*, at a meeting held on the 1st of April; and it forms the subject of a paper which was read at a meeting of the *Royal Medico-Chirurgical Society*, the 23rd of April, 1839.

XI. DOUBLE CONGENITAL CROSS-FOOT (CLUB-FOOT INWARD)— CURE, BY DIVIDING THE ACHILLES TENDONS.

JOHN STIRLING, twenty-three years of age, of 44, Hill-street, Walworth, was born with club-feet, which withstood the remedies applied in a London hospital in his infancy.

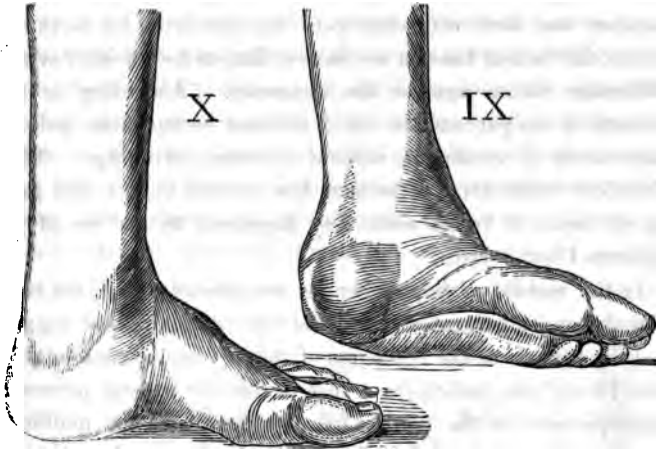
At the time I undertook the treatment of Stirling's case, his feet presented the characteristics of congenital club-foot, and were particularly distinguished by the soles of both feet falling together in a longitudinal direction. (Fig. IX.)

On the 3rd of January, 1838, I divided both Achilles-tendons. Immediately after, the weather becoming suddenly unfavourable, Stirling caught cold, which caused an abscess in the right foot, but without any serious consequence, for the wound was perfectly healed in a few weeks.

By the end of April, so nearly were the feet restored to their natural form (see Fig. X.) that Stirling could walk upon their soles; by the middle of July he could easily walk three miles a day; and in March, 1839, he had acquired such strength as

to walk eight miles in a day, without suffering any painful sensation.

This patient I presented also to the *London Medical Society*, at the meeting of the 1st of April, 1839.



**XII. DOUBLE CONGENITAL CROSS-FOOT (CLUB-FOOT INWARD)
OF A VERY HIGH DEGREE—CURED AT THE AGE OF 28 YEARS.**

JOHN BURNS, 19, St. Anne's-court, Wardour-street, Soho, twenty-eight years of age, and of good constitution, was born with club-feet; for which no advice had been sought until he placed himself under my care. There was a double club-foot of the worst kind, which in outward form greatly resembled case X.

On the 23rd of March, 1838, I divided the Achilles-tendons, and subsequently the plantar fascia, and the tendons of the abductor muscle of the great toe; the improvement in the form of the feet proceeded but slowly, on account of the high degree of the deformity, Burns's advanced age, and because he was obliged to work for his maintenance, and often to neglect the mechanical means. However, the feet have very nearly acquired their natural form, and the patient begins to stand and walk a little.

XIII. DOUBLE CONGENITAL CROSS-FOOT OF THE HIGHEST DEGREE—CURE.

G. B., aged 15, son of a gentleman living at the West end of London, was born with club-feet. In vain, from his birth upwards, did various London mechanics, famous for the cure of this deformity, strive against the distortion. According to the account of his parents, the child suffered excruciating pain by their mode of treatment, without the least advantage. They therefore determined to subject him to it no longer, and gave up all hopes of relief, until they happened to see one of the patients I had cured.

In the middle of September he was placed under my care. The deformity presented congenital *varus* of the highest degree; and the stiffness of the ligaments of the foot was so considerable, that I could only anticipate a cure in case the patient perseveringly persisted in the mechanical treatment. In the middle of October, 1838, I divided both Achilles-tendons, and on the 6th of January, the tendons of both tibialis anticus muscles, in the presence of — Lambert, Esq. surgeon; and now, after eight months' treatment, unattended with any pain, the feet have, to the great joy of his parents, (whose only earthly sorrow was the deformity of their son,) nearly acquired their natural form, and G. B. is already able to walk very well on the soles of the feet.

I presented the plaster casts of the two last cases, which show the state of the feet before the treatment, and also their present condition, to the meeting of the *London Medical Society*, on the 1st of April, and to the meeting of the *Royal Medico-Chirurgical Society*, on the 23rd of April.

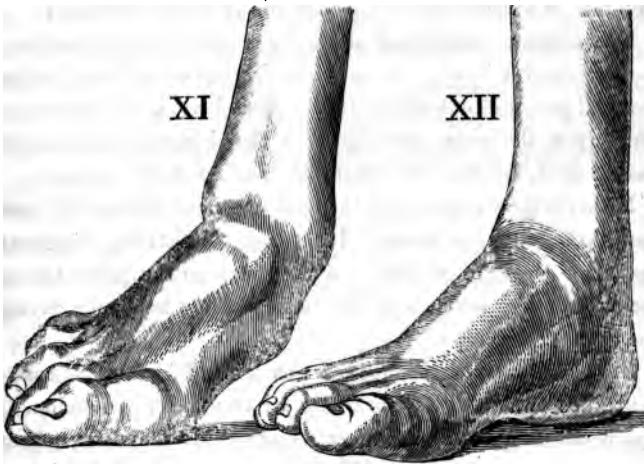
XIV. OUTBOW-FOOT (CLUB-FOOT OUTWARD)—CURE, BY DIVIDING THE TENDO ACHILLIS.

M. R., twenty-six years of age, in his early infancy was attacked by a brain fever, in consequence of which retraction of the muscles of the left calf took place. The heel became drawn

upwards, and when he began to walk the forepart of the foot manifested a great tendency to turn outwards.

When I first saw M. R. the left foot was a genuine example of outbow-foot, (see Fig. XI.) the walking being effected merely on the forepart of the inside of the sole, and being so difficult that the sufferer could scarcely accomplish a mile.

The treatment was begun by dividing the tendo Achillis, the 1st of March, 1838; which operation has had such a decided influence on the mal-formation, that, under a careful mechanical treatment, the foot became straight in four weeks afterwards. (Fig. XII.) The patient gradually gained strength, and at the present time is able to walk six or eight miles a day without the slightest fatigue, while but very slight limping is to be noticed in his gait.



BENT KNEE JOINTS.

THIS deformity of the human frame is likewise one of frequent occurrence. Its influence upon the sufferer is the more melancholy, as it often renders the members useless; and if both knees are affected, his situation is of course by so much the more pitiable. It is therefore most consolatory to reflect, that for such

deformity also the division of the tendons is an effectual remedy.

In this deformity of the knee, the joint is either altogether immoveable—and then the case is incurable—or its movement is more or less impeded as regards bending, to straighten it being impossible. The curability depends not only upon the degree of the deformity, and the length of time it has existed, but also upon the anatomical state of the joint, i.e. upon the organic changes which previous disease may have caused. As deformities of the knee joint are maintained not only by the bending muscles, (whose tendons may be divided,) but also by other parts—as by contracted ligaments—it follows, that here the division of the tendons generally does not so easily effect a straightening as in instances of simple contractions of the foot, and that in difficult cases repeated divisions are necessary.

The extreme tenderness of the knee joint is unfavourable to the cure, and it is of paramount importance so to apply the mechanical power of extension, that it should work as little as possible upon the joint, particularly if the deformity is caused by disease in it, for then its irritability is so much the greater.

Hitherto the extension of the knee has been effected by using the thigh and leg as levers. It is evident, that by this means the whole power of extension works back on the joint, because the articulating surfaces of the thigh and leg bones are pressed one against the other.

I clearly saw the evil effect of this method in the first case of bent knee joint which came under my treatment in London. It was in March, 1838, that I operated upon Mr. COLEMAN, thirty-five years of age, residing at No. 9, May's Buildings, St. Martin's Lane. I divided the tendons, to cure a deformity caused by a white swelling which had existed in his infancy. I made use of the usual method of extension, which created irritation and inflammation of the joint. After deep reflection on the best method of avoiding this evil, I invented an apparatus to effect the extension much less by using the thigh and leg as levers, than by drawing the leg downward.

My apparatus answered its object; for not only did it produce

the proper extension, but even the pains in the knee were diminished by its use; and, although Coleman shortly afterwards discontinued the treatment, both because it interfered with his business and from his repugnance to being confined to his room, yet I regard this case as important to science, leading, as it did, to a better method of extension.

XV. CONTRACTION OF THE KNEE AND FOOT—CURE, BY DIVIDING THE TENDONS.

JOHN BENNETT, No. 2, Gaywood-street, London Road, Borough, aged twenty-two years, from his seventh year had repeated attacks of typhus fever; the last happened seven years before he came under my care. The consequence was a contraction of the knee, at a right angle, accompanied by another one of the foot, as may be seen by the annexed sketch (Fig. XIII.) This obliged Bennett to have a wooden leg, dragging the useless one behind him. On the 3rd May, 1838, I divided the tendons behind the knee, and not without advantage, for he was soon able to stretch the knee further.

On the 27th of August, in the presence of Sir James Clark, I divided the Achilles-tendon, in order, at the same time, to effect a straightening of the foot. In five or six weeks the foot was at a right angle with the leg.

Mechanical means not proving sufficient for the extension of the knee, on the 15th of November, I divided the tendons of the ham a second time. This greatly facilitated the straightening, for in fourteen days the knee formed an angle of one hundred and fifty degrees.

On the 15th of December, I divided the tendon of the tibialis posticus muscle, which had evident influence on turning the foot outward. On the 15th of February, 1839, I divided different fibrous parts in the ham, which is now so far straightened that Bennett walks with ease ten miles a day on the sole of his foot. (See Fig. XIV.)

This case is interesting in a scientific point of view, as it proves the influence of the division of tendons, in connection

with a proper mechanical treatment, while it also taught me the difficulties which the surgeon has to overcome, in order to restore the deformed parts to their symmetry, where extraneous circumstances are unfavourable.



OF SOME OTHER DEFORMITIES OF THE LIMBS.

BESIDES the mal-formations of which I have already spoken, deformities of the toes, the elbow joint, the hand, and the fingers, demand particular attention.

What has hitherto been said respecting the curability and cure of deformities in general, applies to those just named; and it is evident that the division of the tendons is here also not unfrequently an important remedy.

BENT TOES are extremely frequent, and often very troublesome and painful. Hitherto the surgeon has scarcely attempted their cure; and there are cases, where, when very painful, and supposed to be incurable, they have been removed by amputation.

I have found that a simple piece of leather, or pasteboard, laid under the foot, in order to bandage the deformed toe thereon, is a suitable and effectual means to straighten it; only in a few cases is it necessary to resort to a division of the tendons—an operation, however, which is often requisite in distortions of the HAND and FINGERS.

Distortions of the ELBOW are frequently the result of disease in the joint itself, and then their removal becomes more difficult, because the method of extension which I have brought into use for the knee cannot be applied, on account of the anatomical structure of the joint; and the extension is only rendered possible by using the upper and lower parts of the arm as levers. It is therefore particularly important to effect extension by the gentle application of elastic power, in such a manner as to admit of gradual increase and decrease.

I obtained this object by uniting a spring with a screw apparatus.

ON RICKETS.

THIS deformity is most frequent in childhood; the bony substance being too soft to bear the weight of the body, and the bones becoming bent. Besides the limbs, the chest and spine may be the seat of this deformity.

Nature herself is indeed able to straighten the parts deformed by rickety disease; but the weight of the body in general acts too unfavourably, the bones becoming set before the bended part is straightened, and then it is too late to call in the aid of art. This is particularly the case with the lower limbs, which present the most diversified species of rickets. Besides internal medicine, sea-bathing, and change of air, the assistance of mechanical power is to be added.

If the knee be bent inwards, it must be retained outwards by lateral steel supporters. In cases of simple deformity, simple supports are proper; but cases of a higher degree require the supporters to incline in a lateral direction, according to the deformity.

I succeeded in inventing a supporter of this description, which allows inclination in every direction required, and which I have used with great benefit.

It is a melancholy reflection that parents (*even among the wealthier classes*) often take such little pains to remove rickety distortions in their children, as to rest satisfied with the hope that nature alone will effect a cure. The numerous instances of adults afflicted with rickety deformities prove the error of this supposition.

OF WRY-NECK.

WRY-NECK gives the human body a highly unpleasant expression, and, although of less frequent occurrence than deformities of the foot, deserves, nevertheless, the full attention of the medical practitioner. This wryness may be produced by disease in the vertebral bones of the neck; and then it is but seldom re-

movable. In most curable cases, it is caused by contraction of the skin, (in consequence of a burn,) and particularly by a contraction of the muscles of the neck on one side, and chiefly of the *sterno-cleido-mastoideus muscle*.* This contraction is sometimes spasmodic, i.e. there is no shortening of the muscles, or but a slight one, when the sufferer is free from cramp; but when he is seized with cramp, the head is drawn sideways and downwards, so that the chin is forced towards the chest.

For the deformities of which I have been hitherto treating, the division of the tendons is the leading remedy, while in this the muscles themselves are generally to be divided by an operation equally simple, their reunion being effected as in the other cases. After dividing the contracted muscles, much depends on the application of suitable means of extension, particularly if the vertebral bones of the neck be implicated in the wryness. In simple cases a cure may be accomplished in from four to six weeks, and sometimes earlier.

The following case clearly proves the advantage of this method of cure:—

XVI. WRY-NECK—CURE, BY DIVIDING THE STERNO-CLEIDO-MASTOIDEUS MUSCLE.

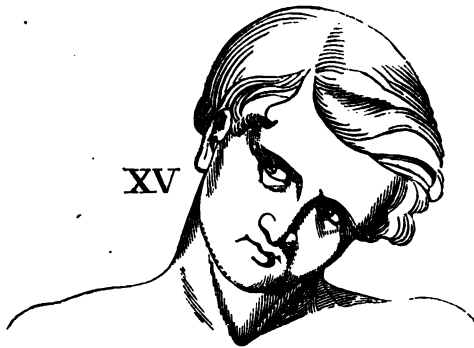
J. C., twenty-four years of age, had been from his second year wry-necked, and had nearly lost all hope of being freed from his deformity. The sterno-cleido-mastoideus muscle of the left side was in a state of tension, and appeared the chief obstacle to an erect position of the head and throat. The whole countenance had, as is generally the case, received an oblique expression, which caused the right eye to stand higher than the left. (Fig. XV.)

On the 16th of November, 1838, the sterno-cleido-mastoideus muscle was divided in the above mentioned simple manner. The

* The sterno-cleido-mastoideus is the great muscle at the side of the neck; its action consists in drawing the head sideways or downwards, according to circumstances.

result of this operation was soon visible, for even on the following day I found the movement of the head more free. The left shoulder, which before the operation was higher, then became parallel to the right, and the patient could without difficulty turn the head far enough to catch sight of the right shoulder.

Eight days after the operation the head stood almost straight, the oblique appearance of the countenance alone remaining. The progress of straightening continued; by simple means the head was retained in its proper position; so that in six weeks after the operation, the movement of the head in all directions was quite free. (Fig. XVI.)



ON DEFORMITIES OF THE SPINE.

THIS deformity, so common to the tender and finely-formed female body, is distinguished from other mal-formations by this, that it more frequently visits the wealthy than the poorer classes.

To give a comprehensive idea of the origin, nature, and cure of this deformity, requires so much to be said, that I should prefer to pass it over altogether in silence, considering my limits, were I not apprehensive the reader might thence conclude, that art and science had made no progress in the treatment of such cases. This certainly is not the fact; and, if in spinal curvatures science cannot exert so quick and decided an influence as in deformed limbs, it results from the nature of the complaint, not from a want of scientific cultivation.

The time is past, when the surgeon regarded every spinal deformity as a consequence of disease in the *vertebræ*, and held the endeavours to straighten it as injurious. It is more than proved, that the majority happen without inflammation, and suppuration of the *vertebræ*, and their intervening ligaments. At the commencement of the distortion, the last named parts are unchanged in form. But a lessening of the height of the vertebral bones soon takes place on the side corresponding to the concavity of the curve, on account of the increased pressure which this side of the *vertebræ* has to bear.

A great number of spinal deformities originating in girls, are attributable to the too rapid growth of the spinal column, in comparison to the other parts of the body, which weakens, and gives it a proneness to bend. An oblique carriage of the body, and a predominant exercise of the muscles on one side, favour the origin and growth of the deformity.

Ricketty disease, through softness of the bony substance, and a relaxed state of the ligaments, frequently occasions spinal curvatures in childhood. The cases are less frequent where the deformity is caused by the increased or diminished contractive power of the muscles.

Mechanical means of extension, joined to muscular exercise, both brought into use with prudence, and under the continual direction of an experienced physician, are the chief remedies to straighten the bended spinal column, and afterwards keep it erect; if no disease of the vertebræ or their ligaments exists, which requires a different surgical treatment.

The difficulty of cure is greater or less, according to the degree and nature of the deformity, the time it has existed, and the age of the patient. The difficulty is enhanced also in proportion as the single vertebral bones have become changed in form, for then a perfect restraightening is seldom to be effected.

Dr. Venel, a Swiss physician, first brought into practice the extension of the vertebral column, the body being retained in a horizontal position. This method of extension was afterwards greatly improved by the late Doctor Heine of Wurtzburg. The majority of later apparatus for this purpose are unimportant modifications: the one invented in our days by Drs. Praray and Guérin, consisting of three boards, is peculiar, and may frequently be employed with advantage.

Well made corsets are an essential assistance to a cure, but never accomplish by themselves what advertising and speculating mechanics so boldly promise. Corsets, or stays, only assist the vertebræ when no horizontal extension is applied, or prevent the more rapid progress of the deformity, but are insufficient for effecting a cure.

Without denying the merit of the late Dr. Harrison of London, an enlightened age must reject his principle, that in treating this deformity the patient must be perpetually kept in a horizontal position. For it is not only too painful for the sufferer to be confined for years to the stretch-board, but it is unadvisable and prejudicial to the general health; and the more so, because the patient may not only stand and walk, without endangering a relapse, but, under certain circumstances, may even use gymnastic exercises with advantage. Besides, a prudent practitioner will rather supply the place of the sudden extension of the vertebræ, which Dr. Harrison brought into use,

by less violent, though more efficient means of extension, continued for several hours at a time.

Hossard, a French mechanician, has in modern times brought a girdle or "*ceinture à inclinaison*" into use, which, apart from the deceptions to which it gave occasion, possesses advantages. It produces an exercise of the muscles corresponding to the convexity of the curve, and thus straightens the latter, and renders the stretch-board superfluous. It is therefore to be regretted, that it is only applicable to the less severe cases, and certain forms of the complaint—cases, however, which only the practiced surgeon can distinguish.

Till lately, orthopædists considered rest as necessary for the cure of spinal deformities, and therefore patients were only allowed a restricted bodily movement. In contradiction to this doctrine, the majority of modern orthopædists now hold that the weakened muscular system requires exercise and strengthening, in order to cure spinal deformity, and, in pursuance of this principle, make use of different artificial bodily exercises.

Ever since the commencement of my orthopædic studies, I have turned my attention to gymnastic exercises, in their relation to spinal deformities; and I am fully convinced, that in spite of the excellent works upon the nature and cure of the complaint under review, the questions—where, when, and what gymnastic exercises are proper, have not yet been satisfactorily solved. Far from rejecting gymnastic exercises, I only wish to see them applied with more moderation, and at a proper period.

As in most of such exercises brought into use by orthopædists, the body is suspended by the hands, so, in regard to their influence, it is important to distinguish—first, the effect of the suspension of the body as an active means of extension, and, secondly, the effect of the exercise of the muscles themselves; and I think that the advantage which most orthopædists would draw from bringing the muscles into play, is much less derived from that exercise than from the suspension of the body; and further, that exercise is in general more applicable to the last stage of the treatment; for by strengthening the muscles,

the resistance necessary to be overcome to effect a cure is increased.

Time will throw more and more light upon this important subject. Young women will no longer be anxious to hide their deformities, even from their medical advisers; and judicious parents will seek advice and help for their children, when the evil, being yet in its infancy, is more under the influence of science.

It will be readily conceded, that to cure spinal deformities, comprehensive medical knowledge is requisite, and deep study of this subject in particular, which in difficulty and extent is perhaps second to no other. When parents are fully alive to this, they will have no longer recourse to the rough hands of the mechanic, to rescue their children from deformity; and the surgeon, it is to be hoped, will for the future far less frequently meet with cases of incurable spinal distortions.

In the foregoing pages I trust, I have accomplished my principal object—that of laying before the reader, illustrated by facts, the great progress which art and science have made in the cure of deformities.

If this progress be admitted, it follows that it is the duty of the philanthropist to place the benefit of the improvements within reach of the poorer classes; which, in London, as well as in many other cities of Europe, has, for want of public institutions for the free admission and cure of the deformed, hitherto remained a desideratum.

That general hospitals are insufficient, is inherent in the nature of the object, and experience has fully shown it. Orthopædia is a branch of medical science which more than any other demands practical experience, and some degree of mechanical talent. There may be excellent physicians and surgeons, who are, nevertheless, no orthopædist.

An institution of this nature ought to be under the superintendence of men who have particularly dedicated themselves to the subject; it demands nurses practised and trained for the purpose; it requires different kinds of machines, arrangements for gymnastic exercises, and baths, and a variety of other things not to be found in general hospitals.

If it be desirable to have particular institutions for those suffering from diseases of the eye; if the same be necessary for those afflicted with small-pox, or other contagious disorders; if it be the duty of humanity to open a quiet asylum for the expectant mother; it is equally desirable, necessary, and humane, to receive the poor cripple, to place medical aid within his reach, that if it be possible his deformed members may be restored to symmetry and use.

The pressing nature of this necessity will become more apparent, when it is considered that orthopædic cures are generally the work of time, demand continual medical superintendence, and frequently forbid the patient for a long period the use of his limbs, or confine him to his bed the greater part of the day.

The duration of the treatment renders it tedious to the sufferer, and, in order to inspire him with confidence and perseverance, it is of particular importance to receive and treat under one common roof those subject to like afflictions. Hence cures, even among the wealthier classes, are often very difficult, if the patient remains in his own family. Thus, orthopædic institutions are, for a speedier and better attainment of the object in view, of great use to rich as well as poor.

Infants have particular claims; for, if even a physician humanely offers his gratuitous aid, parents seldom take the necessary pains to forward his efforts.

The number of children suffering from *ricketty deformities* without prospect of help, is incredibly large. May they, as well as the numerous other unfortunate cripples, draw the eyes of the compassionate upon them! May the many adults afflicted with deformities, which *might have been easily removed* in childhood,

though now no longer curable, move feeling hearts to pity and assistance !

Then it is to be hoped that my appeal to the philanthropist will meet with speedy fulfilment ; that the removal of so pressing an evil is no longer far distant : then will it not be necessary to invoke from their graves the manes of a Byron or a Scott, to awaken sympathy for their poor brothers in affliction.

ERRATUM.

Page 15, line 11 from top, for "Leneerfuss," read "Querfuss."





